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**A bibliography**

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**Epitome**

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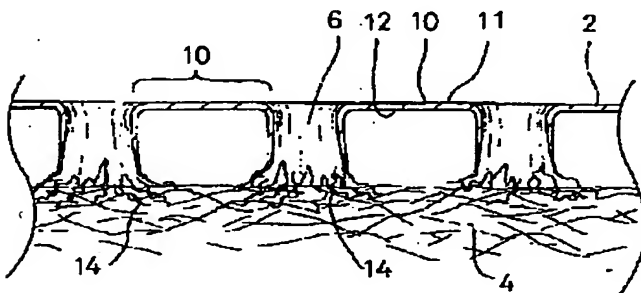
(57) [Abstract]

[Objects of the Invention] The surface sheet and absorbent core of body fluid absorptivity goods are made to unify, without spoiling those flexibility.

[Elements of the Invention] Thermoplastic plastic film which should be used as the surface sheet 2 of the body fluid absorptivity goods 1 is fabricated under heating using differential pressure of a fluid, and \*\*\*\*\* 6 and the fluff 14 of the point are formed in the film. The surface sheet 2 and a core 4 are unified by carrying out heating deformation of the fluff 14 further, and carrying out a confounding to configuration fiber of the absorbent core 4.

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## CLAIMS

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[Claim(s)]

[Claim 1] A manufacture method characterized by including the next production process of body fluid absorptivity goods equipped with a surface sheet which consists of liquid permeability puncturing plastic film at least, a rear-face sheet which consists of plastic film of non-liquid permeability, and an absorbent core which intervenes among both [ these ] sheets and consists of fibrin material.

a. A production process which tears said film and forms a fluff of plurality and an indeterminate form in the point by said burst while forming \*\*\*\*\* of a large number which carry out heating softening of the thermoplastic plastic film, use differential pressure of a fluid, are made to upheave and explode partially, and are prolonged in the direction of a rear face from the surface of said film.

b. A production process which lays said film in the upper surface of said core where a point of said \*\*\*\*\* is turned to said core.

c. A production process which carries out a confounding to fiber which heats at least a film laid in said core partially, is made to transform a fluff of said point, and constitutes said core.

d. A production process which use as said surface sheet said film which carried out the confounding, and said core is made to intervene between said rear-face sheets, and assembles said goods.

[Claim 2] A manufacture method according to claim 1 which is the production process to which a production process heated partially heats said film to coincidence partially, and pressurizes said film.

[Claim 3] A manufacture method according to claim 1 or 2 made by it being involved mechanically and/or carrying out welding of the confounding of said fluff and fiber of a core.

[Claim 4] A manufacture method according to claim 1 which constitutes the field concerned of said core to which the confounding of said fluff is carried out from a fiber layer with fineness 1-10d, a basis weight 10 - a 45 g/m [2 ], and an appearance thickness of 1-10mm.

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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the manufacture method of body fluid absorptivity goods, such as a sanitary napkin and a disposable diaper.

[0002]

[Description of the Prior Art] Conventionally, in the manufacture method of body fluid absorptivity goods, such as a sanitary napkin and a disposable diaper, the technology which unifies the liquid permeability surface sheet which consists of a thermoplastic synthetic-fiber material or plastic film, and the absorbent core containing a thermoplastic synthetic fiber by heat embossing is well-known. For example, to JP,57-139318,U, thermofusion nature is given to the upper part at least, and the technology of the surface sheet of a disposable diaper and an absorbent core which carries out fused junction of these in one is indicated. According to this technology, since a surface sheet and a core are not estranged in the worn disposable diaper, according to capillarity, the excreted body fluid shifts to a core and can keep the skin contact side of a surface sheet prompt in the dry condition.

[0003]

[Problem(s) to be Solved by the Invention] An absorbent core can use as a principal component the pulp fiber generally ground, and can give thermofusion nature by mixing a thermoplastic synthetic fiber to this. On the other hand, thermofusion nature can be given to a surface sheet by using the nonwoven fabric which consists of a thermoplastic synthetic fiber, and plastic film. However, in order to carry out fused junction of these fiber, fiber, and the film, the portion which had to be based on embossing by comparatively high temperature and pressure, and was processed such has the problem that it becomes a hard film with thick and a goods wearer's skin may be stimulated.

[0004] Then, this invention builds and heats a fluff to the \*\*\*\*\* point of a liquid permeability surface sheet, is made to transform that fluff, and makes it the technical problem to solve said problem by carrying out a confounding to an absorbent core.

[0005]

[Means for Solving the Problem] The place made into a means in order that this

invention may solve said technical problem is as follows.

[0006] It is premised on a manufacture method of body fluid absorptivity goods equipped with an absorbent core which intervenes in this invention between a surface sheet which consists of liquid permeability puncturing plastic film at least, a rear-face sheet which consists of plastic film of non-liquid permeability, and both [ these ] sheets, and consists of fibrin material, and it is the feature of this invention to include the following production process in this manufacture method.

a. A production process which tears said film and forms a fluff of plurality and an indeterminate form in the point by said burst while forming \*\*\*\*\* of a large number which carry out heating softening of the thermoplastic plastic film, use differential pressure of a fluid, are made to upheave and explode partially, and are prolonged in the direction of a rear face from the surface of the film.

b. A production process which lays said film in the upper surface of the core where a point of \*\*\*\*\* is turned to said core.

c. A production process which carries out a confounding to fiber which heats at least a film laid in a core partially, is made to transform a fluff of a point, and constitutes a core.

d. A production process which use as a surface sheet a film to which the confounding of the fluff was carried out, and a core is made to intervene between said rear-face sheets, and assembles said goods.

[0007] In addition, in one of the embodiments of this invention, at a production process which heats a film partially, that film is partially heated to coincidence and it pressurizes. Moreover, it makes by a fluff and fiber of a core being involved mechanically and/or carrying out welding of the confounding of a fluff and a core. Moreover, the field concerned of a core to which the confounding of the fluff is carried out consists of fiber layers with fineness 1-10d, a basis weight 10 - a 45 g/m [ 2 ], and an appearance thickness of 1-10mm.

[0008]

[Function] Thus, in the manufacture method of the constituted body fluid absorptivity goods, although a confounding is mechanically possible for the configuration fiber of a core even when it remains as it is, by heating it, it contracts and the \*\*\*\*\* point which has a fluff deforms, a confounding is carried out to high density and a surface sheet and a core do not have much more complicated and estranging.

[0009]

[Example] It is as follows when it explains making a sanitary napkin into an example for the details of the manufacture method of the body fluid absorptivity goods concerning this invention, and referring to an attached drawing.

[0010] Drawing 1 is the partial fracture perspective diagram of the sanitary napkin 1 obtained by the manufacture method concerning this invention. The napkin 1 consisted of the liquid permeability surface sheet 2 equipped with much \*\*\*\*\* 6, a non-liquid permeability rear-face sheet 3, and both the sheets 2 and the absorbent

core 4 which intervenes among three, and has joined the table rear-face sheets 2 and 3 which extend from the periphery of a core 4 watertight by the cementation line 5.

[0011] Drawing 2 is a partial expanded sectional view which meets X-X-ray of drawing 1, and shows the details of the surface sheet 2 and a core 4. It extends in the non-skin contact surface 12 direction from the skin contact surface 11 with the skin contact area 10 which the surface sheet 2 consists of a polyethylene film, and consists of the continuous flat skin contact surface 11, and has \*\*\*\*\* 6 intermittently arranged in the direction of a plane (the direction of X-Y). The diameter of \*\*\*\*\* 6 may be reduced toward the point, that of it may be expanded, or it may be direct [-like ], in the point, are many indeterminate forms and has the fluff 14 which is the film burst piece of closing in from the end face section of \*\*\*\*\* 6. a core 4 — pulp fiber — 0 - 30% of the weight of thermoplastic fiber, and 0 - 40% of the weight of high absorptivity polymer — mixing — or a laminating is carried out, and it can be used if needed, carrying out hydrophilization processing of the thermoplastic fiber. Moreover, the hydrophilicity or the hydrophobic fiber layer which intervenes between the core main part which comes to cover \*\*\*\*\* with a tissue paper or a network-like sheet, and this main part and the surface sheet 2 which make pulp fiber a subject can also constitute a core 4. Generally a thing with fineness 1-10d, a basis weight 10 - a 45 g/m [2 ], and an appearance thickness of 1-10mm can be used for this fiber layer, and it does not ask whether it is one-like as said main part, or you make it only have put each other on it. The surface sheet 2 and a core 4 are in the condition that the fluff 14 of \*\*\*\*\* 6 intervened between the fiber which constitutes a core 4, and carried out the confounding to this mechanically at least, and, in addition to it, may be carrying out the confounding of a fluff 14 and the fiber by welding. Thus, the body fluid which did not leave easily the surface sheet 2 and core 4 of each other which carried out the confounding while handling or use of goods, and was excreted is promptly absorbed by the core 4 in response to the capillary action by \*\*\*\*\* 6, and the capillary action by the fiber which carries out a confounding to \*\*\*\*\* 6 following it.

[0012] (A) of drawing 3, (B), and (C) are mimetic diagrams which illustrate a part of manufacturing process of the surface sheet 2. In (A), the plastic film 50 which carried out heating softening is put on the template 52 which has much detailed puncturing 51, and the vacuum pressure which attracts the film 50 to down [ of a template 52 ] is acting. In (B), a film 50 is attracted, and it upheaves downward in puncturing 51, and is in the condition of having swollen like a balloon. In (C), it explodes at the tip at which the film 50 upheaved, and the fluff 14 of plurality and an indeterminate form is formed by \*\*\*\*\* 6 and closing in which were shown in drawing 2, and the skin contact area 10 is formed in the flat portion of a mold. This film 50 is removed from a template 52, after cutting it out in a necessary size, it is carried on the absorbent core 4 of drawing 2, or after carrying it on the absorbent core 4, it is cut out, and it is used as a surface sheet 2. In order to ensure the

mechanical confounding of the fluff 14 of the surface sheet 2, and the fiber of a core 4 in the case of which, the surface sheet 2 put on the core 4 is heated, and the heat shrink of the fluff 14 is carried out. If the fluff 14 which the film 50 was extended under the operation of vacuum pressure, and produced is heated to near the plasticization temperature, it will contract, and it will be frizzled and will carry out a confounding to the fiber of a core 4 in the process. What is necessary is just to carry out heating embossing of the surface sheet 2 and the core 4 to strengthen a confounding furthermore. Since the fluff 14 in that case is closing in, more promptly than \*\*\*\*\* 6, it can fuse and it can be welded to a core 4 a temperature up and only by applying a comparatively small embossing pressure. It is avoidable that an embossing portion serves as a hard film with thick with it.

[0013]

[Effect of the Invention] In the manufacture method of the body fluid absorptivity goods concerning this invention, since the confounding of the fluff of closing in and the fiber of an absorbent core which were prepared in the \*\*\*\*\* point of a surface sheet is carried out, a surface sheet and a core can be unified without spoiling those flexibility, and said good goods of a feeling of wear can be built (claims 1-3).

[0014] Moreover, by constituting the field concerned of the core to which the confounding of the fluff is carried out from a fiber layer of predetermined fineness, a basis weight, and appearance thickness, a fluff can be made to be fully able to intervene between fiber and confounding reinforcement can be improved (claim 4).

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**DESCRIPTION OF DRAWINGS**

[Brief Description of the Drawings]

[Drawing 1] The partial fracture perspective diagram of a sanitary napkin.

[Drawing 2] Partial expansion end view which meets X-X-ray of drawing 1 .

[Drawing 3] The mimetic diagram showing the manufacturing process of a surface sheet by (A) - (C).

**[Description of Notations]****1 Body Fluid Absorptivity Goods (Sanitary Napkin)****2 Surface Sheet****3 Rear-Face Sheet****4 Absorbent Core****6 \*\*\*\*\*****10 Skin Contact Area****11 Skin Contact Surface****12 Non-Skin Contact Surface****14 Fluff****50 Thermoplastic Film**

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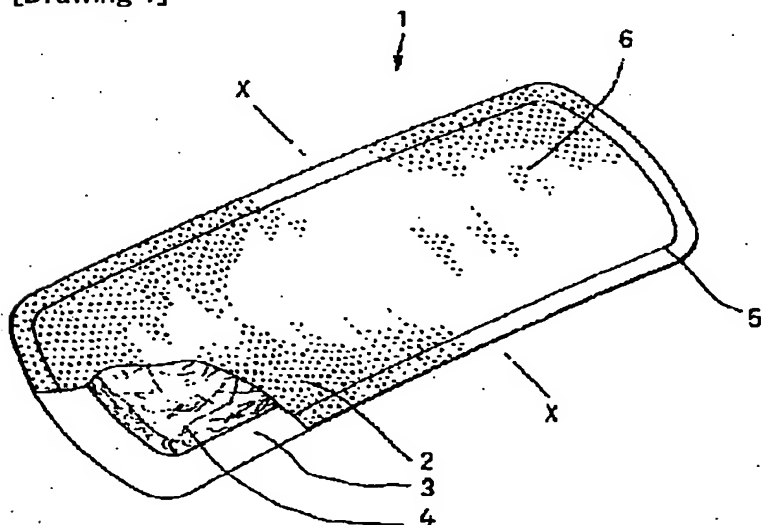
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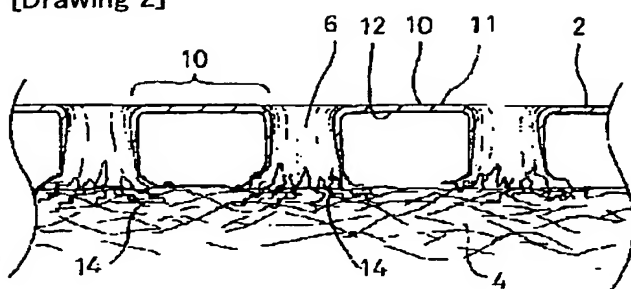
**DRAWINGS**

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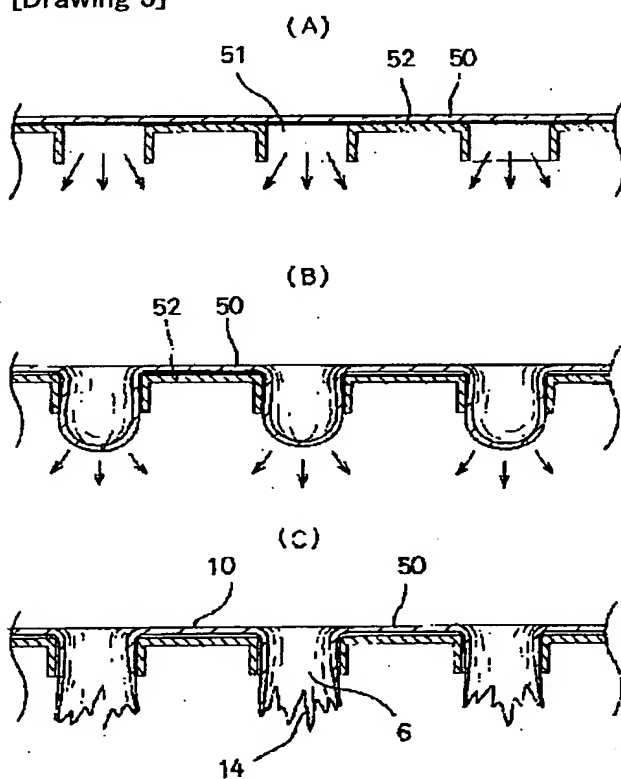
**[Drawing 1]**



[Drawing 2]



[Drawing 3]



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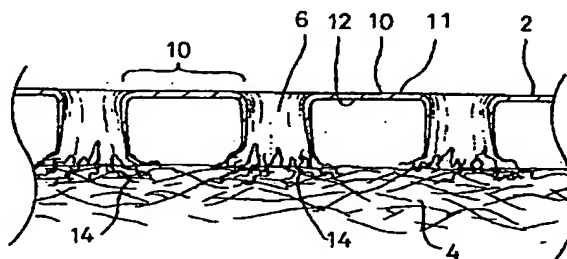
(74) 代理人 弁理士 白浜 吉治

(54) 【発明の名称】 体液吸収性物品の製造方法

(57) 【要約】

【目的】 体液吸収性物品の表面シートと吸液性コアとを、それらの柔軟性を損うことなく一体化させる。

【構成】 体液吸収性物品1の表面シート2とすべき熱可塑性プラスチックフィルムを流体の圧力差を利用して加熱下で成形し、そのフィルムに導液管6とその先端部の毛羽14とを形成する。その毛羽14をさらに加熱変形させて吸液性コア4の構成繊維と交絡させることにより、表面シート2とコア4とを一体化する。



## 【特許請求の範囲】

【請求項1】少なくとも透液性の開孔プラスチックフィルムからなる表面シートと、不透液性のプラスチックフィルムからなる裏面シートと、これら両シート間に介在し繊維素材からなる吸液性コアとを備えた体液吸収性物品の次の工程を含むことを特徴とする製造方法。

- a. 熱可塑性プラスチックフィルムを加熱軟化し、流体の圧力差を利用して部分的に隆起、破裂せしめて前記フィルムの表面から裏面方向へ延びる多数の導液管を形成するとともに、その先端部に前記破裂によって前記フィルムを引裂いて複数かつ不定形の毛羽を形成する工程。
- b. 前記導液管の先端部を前記コアに向けた状態で前記フィルムを前記コアの上面に載置する工程。
- c. 前記コアに載置したフィルムを少なくとも部分的に加熱して前記先端部の毛羽を変形させ、前記コアを構成する繊維に交絡させる工程。
- d. 前記交絡させたフィルムを前記表面シートとし、前記裏面シートとの間に前記コアを介在させて前記物品を組み立てる工程。

【請求項2】前記フィルムを部分的に加熱する工程が前記フィルムを部分的に同時に加熱、加圧する工程である請求項1記載の製造方法。

【請求項3】前記毛羽とコアの繊維との交絡を機械的に絡み合せおよび／または融着させることでなす請求項1または2記載の製造方法。

【請求項4】前記毛羽を交絡させる前記コアの当該面を、織度1～10d、坪量10～45g/m<sup>2</sup>、見掛け厚み1～10mmの繊維層で構成する請求項1記載の製造方法。

## 【発明の詳細な説明】

## 【0001】

【産業上の利用分野】この発明は、生理用ナプキンや使い捨ておむつなどの体液吸収性物品の製造方法に関する。

## 【0002】

【従来の技術】従来、生理用ナプキンや使い捨ておむつなどの体液吸収性物品の製造方法において、熱可塑性の合成繊維材料またはプラスチックフィルムからなる透液性表面シートと熱可塑性の合成繊維を含む吸液性コアとを熱エンボス加工によって一体化する技術は、公知である。例えば、実開昭57-139318号公報には、使い捨ておむつの表面シートと吸液性コアの少なくとも上部とに熱溶解性を与え、これらを一体的に熔融接合する技術を開示している。この技術によれば、着用した使い捨ておむつにおいて表面シートとコアとは離間することがないから、排泄された体液は、常に速やかに毛管現象によってコアへ移行し、表面シートの肌当接面をドライな状態に保つことができる。

## 【0003】

【発明が解決しようとする課題】吸液性コアは、一般に

粉砕したバルブ繊維を主成分とし、これに熱可塑性の合成繊維を混合することによって熱溶解性を与えることができる。一方、表面シートには、熱可塑性の合成繊維からなる不織布やプラスチックフィルムを使用することで熱溶解性を与えることができる。ところが、これら繊維どうしや繊維とフィルムとを熔融接合するには、比較的高い温度と圧力とによるエンボス加工によらなければならず、そのように加工された部分は、厚手で硬い膜となって物品着用者の肌を刺激しかねないという問題がある。

【0004】そこで、この発明は、透液性表面シートの導液管先端部に毛羽をつくり、加熱してその毛羽を変形させ、吸液性コアに交絡させることで前記問題を解決することを課題にしている。

## 【0005】

【課題を解決するための手段】この発明が前記課題を解決するために手段とするところは、以下のとおりである。

【0006】この発明においては、少なくとも透液性の開孔プラスチックフィルムからなる表面シートと、不透液性のプラスチックフィルムからなる裏面シートと、これら両シート間に介在し繊維素材からなる吸液性コアとを備えた体液吸収性物品の製造方法を前提にしており、かかる製造方法において次の工程を含むことがこの発明の特徴である。

- a. 熱可塑性プラスチックフィルムを加熱軟化し、流体の圧力差を利用して部分的に隆起、破裂せしめてそのフィルムの表面から裏面方向へ延びる多数の導液管を形成するとともに、その先端部に前記破裂によって前記フィルムを引裂いて複数かつ不定形の毛羽を形成する工程。
- b. 導液管の先端部を前記コアに向けた状態で前記フィルムをそのコアの上面に載置する工程。
- c. コアに載置したフィルムを少なくとも部分的に加熱して先端部の毛羽を変形させ、コアを構成する繊維に交絡させる工程。
- d. 毛羽を交絡させたフィルムを表面シートとし、前記裏面シートとの間にコアを介在させて前記物品を組立てる工程。

【0007】なお、この発明の実施態様の一つにおいて、フィルムを部分的に加熱する工程ではそのフィルムを部分的に同時に加熱、加圧する。また毛羽とコアとの交絡を毛羽とコアの繊維とを機械的に絡み合せおよび／または融着させることでなす。また、毛羽を交絡させるコアの当該面を織度1～10d、坪量10～45g/m<sup>2</sup>、見掛け厚み1～10mmの繊維層で構成する。

## 【0008】

【作用】このように構成した体液吸収性物品の製造方法においては、毛羽を有する導液管先端部は、そのままでもコアの構成繊維に機械的に交絡可能であるが、それが加熱されることによって収縮、変形し、一層複雑かつ高

密度に交絡して表面シートとコアとは離間することがない。

#### 【0009】

【実施例】この発明に係る体液吸収性物品の製造方法の詳細を、生理用ナプキンを例にして添付の図面を参照しながら説明すると、以下のとおりである。

【0010】図1は、この発明に係る製造方法により得られた生理用ナプキン1の部分破断斜視図である。ナプキン1は、多数の導液管6を備えた透液性表面シート2と、不透液性裏面シート3と、両シート2、3間に介在する吸液性コア4とからなり、コア4の周縁から延出する表裏面シート2、3は、接合線5により水密に接合している。

【0011】図2は、図1のX-X線に沿う部分拡大断面図であって表面シート2とコア4の詳細を示す。表面シート2は、ポリエチレンフィルムからなるものであって、連続する平坦な肌接触面11からなる肌接触域10と、肌接触面11から非肌接触面12方向へ延出し、平面方向(X-Y方向)へ間欠的に配置された導液管6とを有する。導液管6は、その先端部に向かって縮径しているが、拡張しているか、または直状であってもよく、その先端部には多数の不定形で、導液管6の基端部より肉薄の、フィルム破裂片である毛羽14を有する。コア4は、バルブ繊維に0~30重量%の熱可塑性繊維と0~40重量%の高吸水性ポリマーとを混合または積層したものであって、熱可塑性繊維は、必要に応じて親水化処理して使うことができる。また、コア4は、バルブ繊維を主体とする賦型品をティッシュペーパーまたはネット状シートで被覆してなるコア本体と、該本体と表面シート2との間に介在する親水性または疎水性繊維層とによって構成することもできる。この繊維層は、一般に繊維度1~10d、坪量10~45g/m<sup>2</sup>、見掛け厚み1~10mmのものをを用いることができ、前記本体と一体的であるか、それに単に重ね合わせてあるかを問わない。表面シート2とコア4とは、導液管6の毛羽14がコア4を構成する繊維間に介在しこれに少なくとも機械的に交絡した状態にあり、それに加えて毛羽14と繊維とは融着することにより交絡していてもよい。このように交絡した表面シート2とコア4とは、物品の取扱いや使用中に互いに容易に離れることがなく、排泄された体液は、導液管6による毛管作用と、それに続く導液管6と交絡する繊維による毛管作用とを受けて速やかにコア4に吸収される。

【0012】図3の(A)、(B)、(C)は、表面シート2の製造工程の一部を例示する模式図である。

(A)では、加熱軟化したプラスチックフィルム50が多数の微細開孔51を有する型板52に載せてあり、そのフィルム50を型板52の下方向へ吸引する真空圧が

作用している。(B)では、フィルム50が吸引され、開孔51において下方向へ隆起し、風船のようにふくらんだ状態にある。(C)では、フィルム50が隆起した先端で破裂し、図2に示した導液管6と肉薄で複数かつ不定形の毛羽14とが形成され、また、型の平坦な部分には、肌接触域10が形成されている。かかるフィルム50は、型板52から剥がし、所要の寸法に裁断してから図2の吸液性コア4の上に載せるか、または吸液性コア4の上に載せてから裁断して表面シート2として使用する。いずれの場合においても、表面シート2の毛羽14とコア4の繊維との機械的な交絡を確実にするため、コア4に載せた表面シート2を加熱し、毛羽14を熱収縮させる。フィルム50が真空圧の作用下に延伸されて生じた毛羽14は、可塑化温度近くまで加熱されると収縮して縮れ、その過程でコア4の繊維と交絡する。さらに交絡を強固にしたいときには、表面シート2とコア4とを加熱エンボス加工すればよい。その場合の毛羽14は、肉薄だから導液管6よりも速やかに昇温、熔融し、比較的小さなエンボス圧力を加えるだけでコア4に融着可能である。それによって、エンボス部分が厚手で硬いフィルムとなるのを避けることができる。

#### 【0013】

【発明の効果】この発明に係る体液吸収性物品の製造方法においては、表面シートの導液管先端部に設けた肉薄の毛羽と吸液性コアの繊維とを交絡させるから、表面シートとコアとを、それらの柔軟性を損うことなく一体化し、着用感のよい前記物品をつくることのできる(請求項1~3)。

【0014】また、毛羽を交絡させるコアの当該面を所定の繊維度、坪量、見掛け厚みの繊維層で構成することにより、毛羽を繊維間に十分に介在させて交絡強度を向上することができる(請求項4)。

#### 【図面の簡単な説明】

【図1】生理用ナプキンの部分破断斜視図。

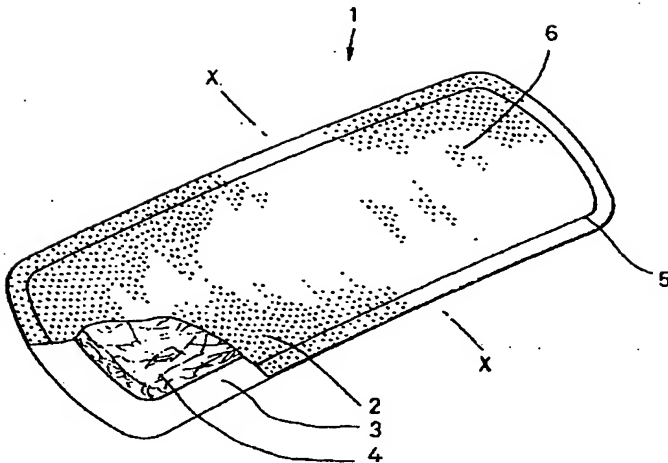
【図2】図1のX-X線に沿う部分拡大断面図。

【図3】表面シートの製造工程を(A)~(C)によって示す模式図。

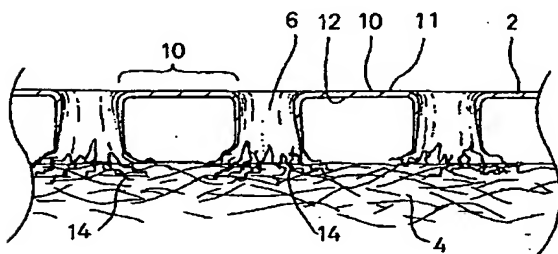
#### 【符号の説明】

- |    |                  |
|----|------------------|
| 1  | 体液吸収性物品(生理用ナプキン) |
| 2  | 表面シート            |
| 3  | 裏面シート            |
| 4  | 吸液性コア            |
| 6  | 導液管              |
| 10 | 肌接触域             |
| 11 | 肌接触面             |
| 12 | 非肌接触面            |
| 14 | 毛羽               |
| 50 | 熱可塑性フィルム         |

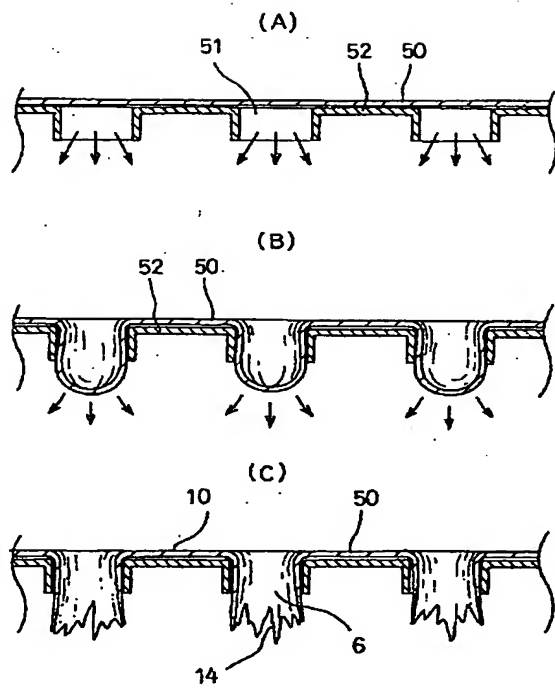
【図1】



【図2】



【図3】



フロントページの続き

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